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Onion Smut

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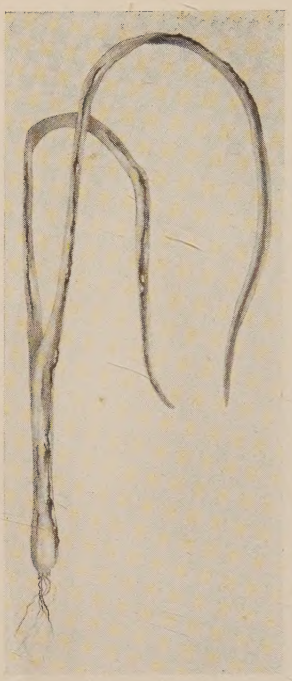
The onion is an important truck crop in Wisconsin. It is a ready cash crop and is adapted to intensive cultivation. The acreage varies from 1,000 to 2,000 acres in different years, with yields around 500,000 bushels.

A drip of formaldehyde solution disinfects the soil surrounding the seed

Onion smut is causing serious loss in some fields, taking over 50 per cent of the crop. Unless checked by preventive treatment it will drive many growers to seek other less profitable crops.

Onion smut is caused by a fungus, a microscopic plant, which lives in the soil. During the winter the fungus rests in the shape of rough black spore balls. These are so small that a microscope must be used to see them. When spring opens the spores germinate, just like seeds, and send out fungus threads which bear a quantity of secondary spores.

The young onion plant when it starts from the seed is very small and tender and cannot keep the fungus threads that come from the secondary spores from entering and growing in the leaves. After penetrating the young onion plant the fungus grows very rapidly and often kills the seedlings. The first symptom of the disease is the appearance of dark spots in the leaves. Then the plants wilt, the dark spots break open, and the black mass of smut spores is spilled about on the ground.



Smut on onion seedling

Some plants remain alive and give small bulbs. These usually have smut boils in the scales. In badly diseased fields, plants that grow without smut are not held in shape by neighboring plants and so grow big bull necks. These cure out slowly and are more subject to decay.

A drip of formaldehyde solution with the seed at planting kills the smut spores near the seed and allows the plants to start unmolested by the smut fungus.

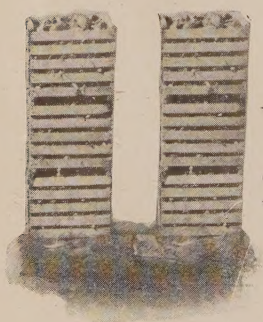
Onion plants which have started four or five leaves are much more resistant against the fungus than the plants just starting. Formaldehyde evaporates soon after it is applied so that to get best effects it must be put in with the seed. If the seed is poor and the field has to be replanted, a second application of formaldehyde must be made.

Formaldehyde treatment for onion smut is not expensive. A drip attachment may be made from a kerosene can or constructed by a good tin-smith. A lever handle faucet is more satisfactory than a screw faucet for controlling the stream of formaldehyde solution. The initial cost for the attachment should not be over $10 and the cost for treatment about $5 for an acre.

On sick fields, the increase due to treatment (1913 to 1918) averaged 328 bushels an acre. The average amount of smut on the untreated fields was 47 per cent, and on the treated fields 5 per cent.

How to Control Onion Smut

1. Provide seeder with 2-gallon solution can having in the bottom $\frac{3}{8}$-inch lever handle faucet with $\frac{5}{16}$-inch opening through body and



The crop from two untreated rows

Cause and Effect Circulars:—Effect follows cause as a result of the ope success or failure depends largely on whether he controls the forces of nature Whether or not he succeeds is determined by his ability to market well the costs of production by employment of better and cheaper methods of feed proving his stock, both plant and animal, through better breeding; by lessen or less continually, through the inroads of preventable disease: and by stopp neglect.

key, extended handle to be operated as the seed control, 3/8-inch drip pipe that will deliver solution on the seed before it is covered; tight fitting, or preferably screw top, cover to prevent slopping of solution.

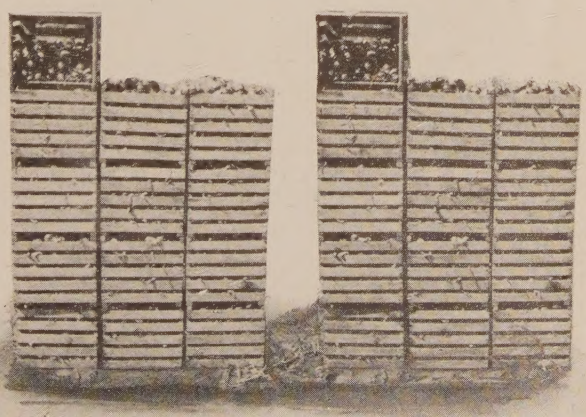
2. Dilute the strong 40 per cent formaldehyde 1 ounce to 1 gallon of water (1 pint to 16 gallons gives the same dilution). Have this dilute solution in a barrel so it will be handy to fill the can.

3. Set lever and run seeder so that 1 gallon of solution will be delivered for every 185 feet of row. This is about 200 gallons for an acre.

Black smut boils on scales of partly developed onions

4. Take special care in filling the formaldehyde can to avoid splashing the solution on the seed box or packing wheel. Adjust the drip pipe to prevent the solution from coming in contact with any of the seeder parts. If the soil tends to clog between the plow and the packing wheel remove one or both of the seed coverers. Thorough preparation of the seed bed will make the treatment easier to apply.

5. Larger tanks and drip attachments may be provided for the horse-drawn 6-row seeders.



The crop from two treated rows

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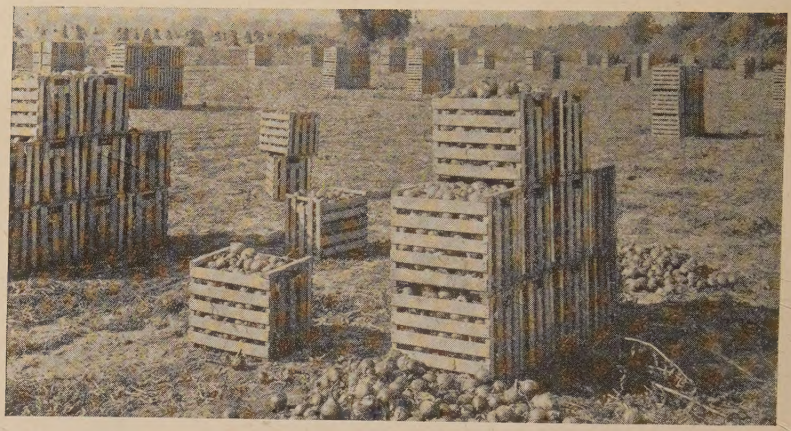
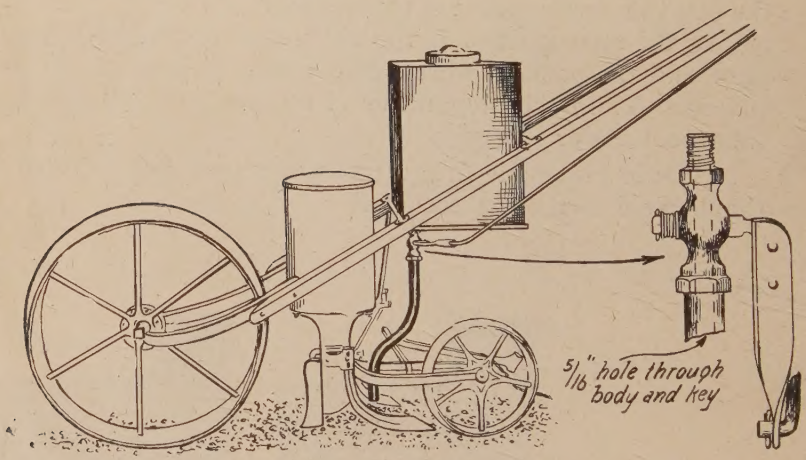


A 100-acre field of onions. This crop was worth saving



The seeder equipped with the drip attachment

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